

A. Cover Sheet (*Attach to front of proposal.*)

1. Specify: ☒ agricultural project or ☒ individual application or
☐ urban project ☐ joint application
2. Proposal title—concise but descriptive: Orland Unit and TCCA Regional Water Use Efficiency Project to Partially Address CALFED Quantifiable Objectives (QO) 13 and 18 (Subregion 2) and 20, 25, and 27 (Subregion 3).
3. Principal applicant—organization or affiliation: Orland Unit Water Users' Association
4. Contact—name, title: Rick Massa, Project Manager
Mailing address: 828 Eighth Street, Orland, California
5. Telephone: 530/865-4126
6. Fax: 530/865-7631
7. E-mail: ouwua@glenncounty.net
8. Funds requested—dollar amount: \$265,000
9. Applicant cost share funds pledged—dollar amount: \$31,800
10. Duration—(month/year to month/year): July 2001 to May 2002
11. State Assembly and Senate districts and Congressional district(s) where the project is to be conducted: State Assembly District 2 (Richard Dickerson); State Senate District 4 (K. Maurice Johannessen); Congressional Districts 2 (Wally Herger) and 4 (Doug Ose)
12. Location and geographic boundaries of the project: Vicinity of Orland, California, in CALFED Sub-Regions 2 and 3.
13. Name and signature of official representing applicant. By signing below, the applicant declares the following:
— the truthfulness of all representations in this proposal
— the individual signing the form is authorized to submit the application on behalf of the applicant
— the applicant will comply with contract terms and conditions identified in Section 11 of this PSP

Rick Massa

(printed name of applicant)

February 14, 2001

(date)

(signature of applicant)

B. Scope of Work

Relevance and Importance

Abstract (Executive Summary).

Project Description—The Orland Unit Water Users Association (OUWUA) is submitting this grant application in support of a cooperative Project with the Tehama-Colusa Canal Authority (TCCA), under the CALFED Water Use Efficiency Program. The Project will be a conceptual design study to support implementation of key infrastructure elements of a regional water management strategy that will provide greatly improved conveyance and water use efficiency within the OUWUA service area, reduce seasonal surface-water diversions on the Sacramento River at the Red Bluff Diversion Dam, expand the conjunctive use of groundwater resources in the OUWUA and TCCA service areas, and make available a significant quantity of surface water at critical times of the year to meet other beneficial needs in the Sacramento River Basin.

Key elements of the Project include converting the OUWUA service area distribution system from an open-channel to a piped system, removing the OUWUA's North Diversion Dam on Stony Creek, installing a new pipeline from the base of Black Butte Dam to the TCCA Canal, which would replace the OUWUA's South Canal, and a network of groundwater wells and recharge basins adjacent to the OUWUA distribution system and the TCCA Canal in the area of the Stony Creek fan where the TCCA Canal passes through the OUWUA service area. The Project will partially address CALFED Quantifiable Objectives 13 and 18 (Subregion 2) and 20, 25, and 27 (Subregion 3).

Need for Project—The Project will address several critical local and regional water issues. Critical local issues for the OUWUA are the relatively high operational losses and low on-farm efficiency in the service area. This is due to the age of the open-channel canals and laterals and the use of a rotation-based irrigation delivery schedule, which hinders efficient on-farm irrigation methods, i.e., drip systems and micro emitters. This results in a need for increased diversion and use of Stony Creek watershed supply, and less ability to hold back supplies for beneficial use elsewhere. By converting the OUWUA system to a piped, metered, on-demand delivery system, the Project will increase conveyance and on-farm efficiency within the OUWUA service area.

A major regional and federal management issue addressed by this Project is the use of the Red Bluff Diversion Dam during the spring to provide Sacramento River water supply to the TCCA service area. The dam gates are a fish passage barrier. This project has the potential to reduce the need for Sacramento River diversions into the TCCA Canal in the spring months, by providing a supplemental supply from Stony Creek. The Project will also address the local and regional issue of fish passage impacts and conveyance losses that result from diversions on Stony Creek below Black Butte Dam. The project will eliminate the remaining two surface diversions below Black Butte Dam, providing improved fish passage conditions and improved flexibility and reliability of the Stony Creek water supply.

A key regional and federal water management issue is the need for improved regional supply reliability and flexibility to seasonally modify diversion rates. The Project will address this problem by providing maximum supply flexibility and reliability through conjunctive

management of both surface-water and groundwater supplies, improving timing of diversions to work around seasonal restrictions, and provide flexibility to retain releases in storage for allocation to other beneficial uses.

Project Objectives—The project objective is to improve water conveyance and on-farm efficiency, optimize and integrate available surface water and groundwater supplies from Stony Creek and the underlying aquifer, and reduce seasonal Sacramento River diversions at Red Bluff during March, April, May, October, November, and December. The Project will support a more efficient, reliable, and flexible water supply for the OUWUA and TCCA, while providing improved fish passage and instream flow conditions in Stony Creek and the Sacramento River. The project will reduce diversion from the Sacramento River to improve instream flow conditions (QOs 13 and 20), provide long-term diversion flexibility to increase the water supply for beneficial uses (Quantifiable Objective 27), and decrease nonproductive ET to increase supply for beneficial uses (Quantifiable Objective 18).

Technical/Scientific Merit, Feasibility, Monitoring, and Assessment

The work plan for the conceptual design study is broken down into the following main tasks. Upon completion of the workplan, the information will be available to support implementation of the most efficient and beneficial mix of management and infrastructure elements.

- Task 1-Project Management and Administration
- Task 2-Field Investigation and Background Data Collection
- Task 3-Project Component Options and Initial Evaluation
- Task 4-Stakeholder and Agency Meetings and Coordination
- Task 5-Project Alternatives Evaluation
- Task 6-Implementation Plan for Preferred Alternative
- Task 7-Conceptual Design Report

Task 1-Project Management and Administration

Task 1 will cover all project management work for the study. Expected duties under Task 1 include the following.

- Establishing and maintain work plans, budgets, and schedules for the study.
- Quarterly summary letter reports to DWR. The summary reports will include progress reports, summary of tasks, and milestones.
- Review all work products.
- Management of consultant contracts.
- Provide general coordination and communication between Reclamation, DWR, consultants, and other study participants.

Task 2-Field Investigation and Background Data Collection

The purpose of Task 2 is to collect the information required to support the conceptual design. This information will establish the “baseline” or existing conditions in the area, determine specific design and level of service requirements that project alternatives should meet, and provide the analytic tools (models) needed to evaluate and screen project alternatives.

Subtask 2.1 Irrigation Demand and Level of Service Criteria—Existing and future irrigation demands within the OUWUA service area will be evaluated to determine the necessary conveyance system capacity of key facilities. Seasonal variations in water demand will be considered. Typical average monthly flows for the TCCA canal will be evaluated using recent water needs assessment results. For the OUWUA, district operations staff and local growers will meet to discuss and evaluate a range of criteria for future level of service requirements with a fully piped or partially piped distribution system.

Subtask 2.2 Review and Evaluate Existing Distribution System Operations-OUWUA operations data will be reviewed, and field staff will be interviewed to determine the basic material and operational state of each main portion of the distribution system. The focus will be on determining things like the level of seepage and operational spills, flow control and measurement problems, and the basic material condition of the ditches, weirs, and other structures. The product of Subtask 2.2 will be an evaluation and ranking of the existing distribution system by lateral. This ranking will prioritize the distribution system improvements that can provide the greatest net benefits.

Subtask 2.3 Surveying-Topographic surveys will be conducted along the OUWUA main canals and laterals. This information will be used to provide basic slope and elevation information for the distribution system. The product of Subtask 2.3 will be profiles of the main canals and laterals, along with input data to Subtask 2.4 Hydraulics Modeling.

Subtask 2.4 Distribution System Hydraulics Model-A network hydraulics model will be created, representing the main canals and laterals within the OUWUA. The hydraulics model will serve as a fundamental simulation and analysis tool for looking at a range of piping alternatives for the main canals and each main lateral. The hydraulics model will be used extensively in Task 3.

Subtask 2.5 Review of Stony Creek Hydrology, Reservoir Operations, and Red Bluff Diversion Dam Operations-Historical Stony Creek hydrology, existing reservoir operations, and Red Bluff Diversion Dam operations will be reviewed, drawing primarily from previously published sources. The basic purpose of the review will be to determine the amount of storage available to manage the conserved water expected to result from the Project. The OUWUA has two reservoirs in the Stony Creek watershed that can be used for seasonal and inter-annual carryover storage. It is assumed that Black Butte Reservoir will continue to be operated by the Corps of Engineers under existing operating rules and guidelines. The product of Subtask 2.5 will be a technical report summarizing the potential for the OUWUA’s existing reservoirs to accommodate additional supplies available as a result of the Project, and the availability of Stony Creek supply in the Spring to offset TCCA diversions at Red Bluff.

Task 3-Project Component Options and Initial Evaluation

The purpose of Task 3 is to determine the components, or “building blocks,” out of which a range of project alternatives can be constructed. Under this task, the overall supply and distribution system will be divided into its major geographic and facility components and a range of options for each component will be determined. For each option, basic information will be determined, such as facility layout and sizing, description of operations, potential water savings or reduced diversions, planning-level cost estimates, and summary of pros and cons for each option. Using this information, a range of feasible Project alternatives will be compiled. The product of Task 3 is a range of comprehensive Project alternatives, which will be carried forward to Task 4 and 5 for evaluation and screening. Primary Project components include:

- **OUWUA North Canal Service Area Distribution System Improvement Options**-Will evaluate the basic options for the extent of converting the North Canal service area to a piped system. Basic options assumed at this time include converting the entire north side distribution system to a piped network, converting only the main canal and major laterals, or converting just the North Canal.
- **OUWUA North Diversion Dam Removal**—Evaluate options removing dam and supplying the North Canal via a piped crossing of Stony Creek from the South Canal.
- **South Canal Service Area Distribution System Improvement**—Evaluate options for the extent of converting the South Canal service area to a piped system. Basic options assumed at this time include converting the entire south-side distribution system to a piped network, converting only the South Canal and major laterals, or converting just the South Canal.
- **Groundwater Wells and Recharge Basins**—Evaluate the costs and benefits of tying in existing and/or new groundwater wells in the eastern areas of the OUWUA with future piped distribution system and the TCCA Canal. The wells may supplement surface water supply during critical times of year, and allow more flexible management and allocation of the combined groundwater and surface water resources within the district. Local recharge basins would be used to store available seasonal excess flows from surface water supplies and allow percolation back into the underlying aquifer.
- **Pipeline from Black Butte Dam to TCCA Canal**—Evaluate the alternative of tying in the southern area of the OUWUA distribution system to the TCCA Canal via a large buried pipeline. The tie-in would allow the OUWUA to supply supplemental flow to the TCCA Canal under feasible conditions, and could also include a pump station to deliver flow from the TCCA Canal to the lower end of the OUWUA distribution system.
- **Power Generation Evaluation**—Evaluate the potential for a low-head hydropower generating station on the new pipeline. The power supply could be used to offset power consumption from local groundwater wells or other large base loads.

Task 4—Stakeholder and Agency Meetings and Coordination

Task 4 will involve stakeholder and Agency meetings and outreach as necessary to ensure input on the options under evaluation. A series of meetings will be held with the OUWUA

board and growers, TCCA board, USBR, DWR, and others as needed. Input from Task 4 will be used to evaluate the project alternatives and insure key issues are addressed.

Task 5—Project Alternatives Evaluation

Task 5 will combine those options from the Task 3 evaluations that are determined to be the most feasible provide the greatest net benefits. The options from Task 3 are expected to be combined into three primary alternatives. Each alternative will then be evaluated against the following criteria:

- Local Water Conservation
- Regional Hydrology and Storage
- Construction and Operations and Maintenance Costs
- Economics Analysis—Long-term Benefits and Costs
- Environmental Impacts and Benefits
- Net Benefits

On the basis of this evaluation process, Task 5 will provide a recommended (preferred) Project alternative that will be carried forward for implementation planning in Task 6.

Task 6-Implementation Plan for Preferred Alternative

Task 6 will provide a summary implementation plan for the preferred Project alternative. The product of Task 6 will be a chapter in the conceptual design report outlining the implementation plan for the preferred alternative. The implementation plan will layout the major issues and process for each of the following:

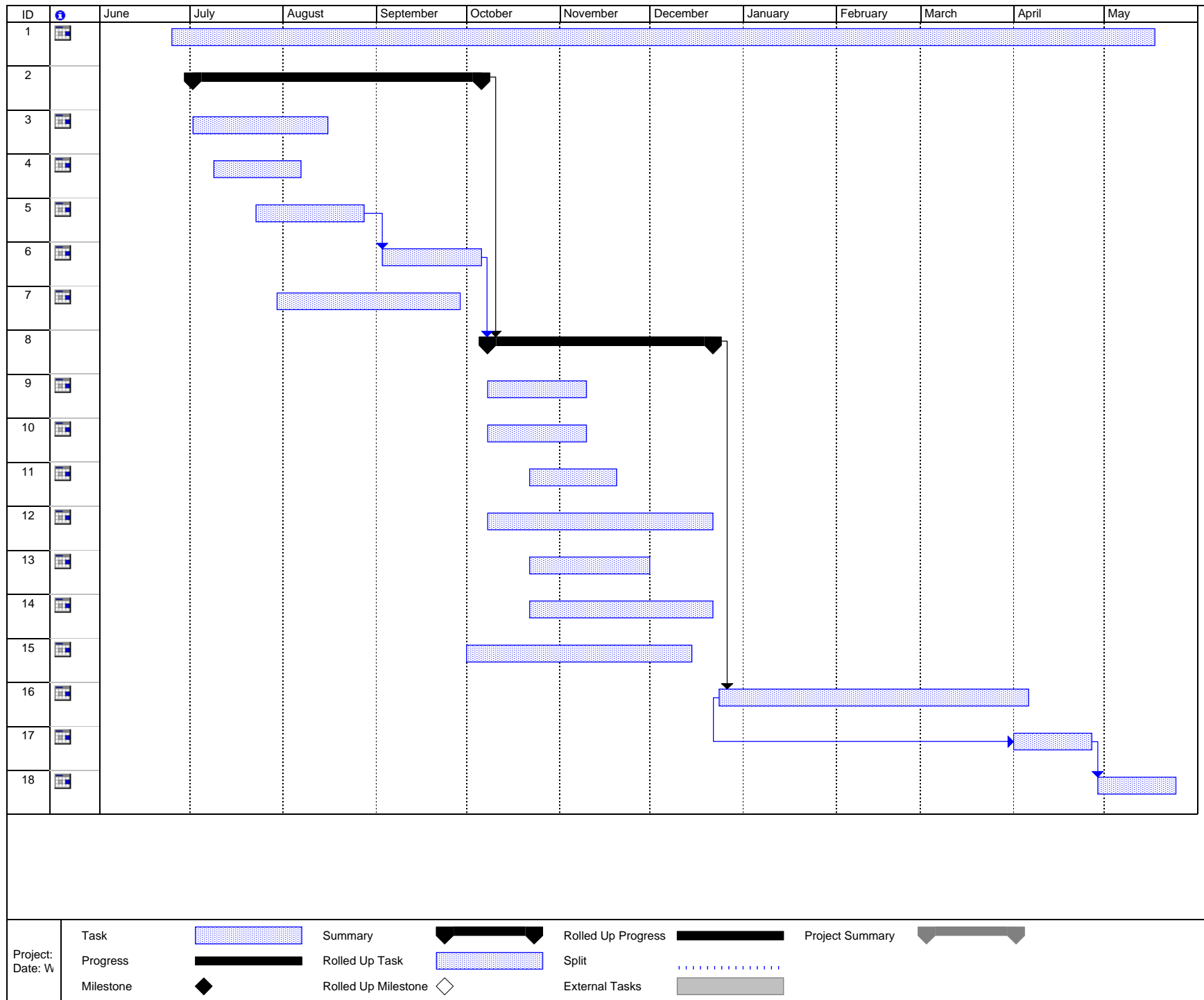
- Environmental Documentation and Permitting
- Coordination with State and Federal Agencies
- Funding Sources and Project Financing
- Design Services
- Construction

Task 7-Conceptual Design Draft and Final Report

Task 7 will include writing, editing, and reproducing the Conceptual Design Draft and Final reports. A draft Final Report will be submitted for review by DWR and Reclamation. Following receipt of written review comments, a final Conceptual Design Report will be submitted. The draft and final reports will incorporate the data, analysis, and findings from Tasks 2 through 6, and will provide the basis for the decision to seek funding assistance for implementation of the preferred Project alternative.

Schedule

A bar chart showing the project schedule is on the following page. Projected costs for each task are shown on the budget presented in Section E. Quarterly and annual reporting will be done as part of Task 6, Project Management.



Monitoring and Assessment

Progress toward the QOs will be made throughout the project. As flow, delivery, and system loss data are gathered, they will be made available to DWR and the Bureau, as well as other regional water purveyors. This information will be available at the OUWUA District office.

C. Outreach, Community Involvement, and Information Transfer

Project Outreach Efforts

The proposed project will provide the capability to more flexibly and efficiently manage the amount and timing of diversions. It will reduce diversions, thereby increasing instream flows, and also will reduce spill, ET, and seepage losses. OUWUA will include in its newsletters to area growers informing them of the project, its goals, and the status of the alternatives analysis. As described in Subtask 2.1 district operations staff and local growers will meet to discuss and evaluate a range of criteria for future level of service requirements with a fully piped or partially piped distribution system.

Training, Employment, and Capacity Building

The project will allow growers to utilize new irrigation technologies. OUWUA will coordinate efforts with CalPoly's Irrigation Training and Research Center (ITRC) Center to develop training seminars and programs to improve on-farm water use efficiency. OUWUA has worked with ITRC in the past.

Although this phase of the Project does not directly provide employment or capacity building, it does support the ultimate goal of more efficient management of agricultural water supplies. This, in turn, will potentially make more water available for beneficial uses. Glenn County typically has a higher unemployment rate and lower average per capita income and median family income than the rest of the state. Agriculture is a major employer and a more reliable, better managed water supply will help improve the region's economy by accommodating growth in industry and agriculture, including growth in employment opportunities in all economic sectors.

Disseminating Information

The intent of the proposed project is to improve water management capabilities, reduce seepage, ET, and spill losses, and increase instream flows. Information compiled during this project will be disseminated to area growers, neighboring water contractors, USBR, and DWR. This information will include the potential benefits that could be achieved through a cooperative regional water management and conservation approach. The information gained during this project will provide a framework for developing cooperative, regional solutions.

Letters of Notification

OUWUA provided a letter of notification to the Orland-Artois Water District, Tehama-Colusa Canal Authority, Glenn-Colusa Irrigation District, Department of Water Resources, and U.S. Bureau of Reclamation. Copies of the letters are attached to this proposal.

D. Qualifications of the Applicants, Cooperators, and Establishment of Partnerships

1. Include a resume(s) of the project manager(s). Resumes shall not exceed two pages.

Resumes for Rick Massa/OUWUA Project Manager and Howard Wilson/CH2M HILL Project Manager are attached to this application.

2. Identify and describe the role of any external cooperators that will be used for this project.

Task 4 will involve stakeholder and Agency meetings and outreach as necessary to ensure input on the options under evaluation. A series of meetings will be held with the OUWUA board and growers, TCCA board, USBR, DWR, USFWS, and others as needed.

3. Provide information about partnerships developed to implement the project.

No formal partnerships are anticipated for the initial stage of this project. However, a cooperative, regional solution will require formal agreements between area purveyors and affected agencies.

E. Costs and Benefits

- 1. Budget summary and breakdown. Provide a detailed budget that includes the following line items. (Indicate the amount of cost sharing for each element as well as direct and indirect costs):***

The estimated project cost is \$296,800. The allocation of costs by task is shown below.

CONCEPTUAL DESIGN STUDY BUDGET

Task No.	OUWUA Labor	OUWUA Expenses	Travel	Consultants	Direct Costs	Total Cost
1	\$10,000	\$1,000	\$2,000	\$105,000	--	\$118,000
2	\$6,600	\$600	--	\$59,500	--	\$66,700
3	\$4,400	\$500	\$1,000	\$38,000	--	43,900
4	\$1000	\$100		\$9,600	--	\$10,700
5	\$5,000	\$400		\$33,700	--	\$39,100
6	\$2,000	\$200	500	\$15,700	--	\$18,400
Total	\$29,000	\$2,800	\$3,500	\$261,500	--	\$296,800

- 2. Budget Justification. Provide a brief explanation for the labor costs (including consultants), equipment, supplies, and travel included in the budget.***

The costs for this project are composed primarily of labor time for OUWUA staff and consultant staff as needed to support the technical analysis. The budget is justified by the associated scope of work, which will address a wide range of technical and institutional analysis in a focused manner and establish the conceptual layout of this regional water management project. There are minimal expenses, primarily for travel related to field work and outreach meetings.

- 3. Benefit Summary and Breakdown.***

The conceptual-level study is intended to provide much of the information required to quantify the Project outcomes and benefits, so a detailed summary is not available at this stage. However, a general qualitative summary of the benefits does provide some indication of the potential quantifiable benefits. In general, the Project has strong potential to increase the overall water use efficiency within the OUWUA service area by 15 to 25 percent, resulting in between 15,000 ac-ft and 25,000 ac-ft per year of additional water supply that can be allocated for other beneficial uses. The level of service and reliability to growers within the OUWUA service area would also be improved. A reasonable level of conjunctive groundwater development in the Stony Creek fan area of the OUWUA could provide

corresponding additional normal and critical year supply by freeing up an equivalent amount of surface-water supplies for reallocation to other beneficial uses. The reduction in TCCA diversions at Red Bluff during the spring of normal and wet years would also have significant benefits for instream flows on the Sacramento River. As discussed above, the Project will benefit the CALFED program in the following specific ways: reduced nonproductive consumptive (ET) losses (QOs 18 and 25), increased long-term diversion flexibility and reliability (QO 27), and increased instream flows during critical seasons of the year (QOs 13 and 20). Each of these benefits would assume a larger relative value during critical water years in which these marginal increases in supply and operations flexibility become even more critical. In summary, the Project provides substantial benefits to both local and regional water management interests. Implementation costs for subsequent phases of the Project would be expected to be allocated according to the value of these benefits to each participating party.

4. Assessment of Costs and Benefits. Include an assessment that summarizes the costs and benefits of the proposed project.

An assessment of the costs and benefits of the Project cannot be done at this time. However, the approximately \$300,000 cost of the study is likely less than 1 percent of the capital costs of the eventual project implementation costs. Assuming CALFED (or other third party) costs of approximately \$300 per acre-ft for development of new water supplies, if the Project provides seasonal flexibility and diversion reductions of up to 100,000 ac-ft on average, it has a minimum potential net present value of approximately \$30 million. The combination of increased conveyance and on-farm efficiency, a modest level of local conjunctive use, and use of Stony Creek supply to offset early Spring TCCA diversions at Red Bluff for between 30 and 60 days is likely to provide a net benefit to the Sacramento River Basin well in excess of the Project implementation costs.